Portsmouth Gaseous Diffusion Plant Site
Tour Script - Bus 1 Route
Industry Day Exchange
April 1, 2008

5 MINUTE DRIVE FROM OSU ENDEAVOR CENTER ON SHYVILLE ROAD TO PLANT

Introduction: David Kozlowski, U.S. Department of Energy's Portsmouth Paducah Project Office; Acting Site Lead for the Portsmouth Site

Welcome to southern Ohio! Thank you for participating in the site tour. There will be a great deal of information provided on the tour route. We will be giving information on many of the overall 135 total facilities for the D&D project with an emphasis on the specific facilities in the initial phase of the D&D project.

You will hear a lot of building numbers today. Building numbers at Portsmouth start with an X (similarly, building numbers at Paducah start with a C and at Oak Ridge, a K). Something to keep in mind that will help you:

- X-100 series mean administrative type structures
- X-300 series refer to process operations facilities
- X-500 series refer to electrical facilities
- X-600 series refer to water facilities and
- X-700 series refer to process support facilities

The gaseous diffusion plant facilities generally are 3 digits and the centrifuge facilities use 4 digits.

There is a mixture of ownership on the site so please listen carefully during the tour. Those facilities that have been turned back to DOE and are a part of this initial phase of the project will be identified as well as the facilities that are a part of the overall site.

We apologize up front that in order to keep everyone on the same level playing field, we must stick to the written tour script. Please use the cards provided to you for any questions you might have during the tour. We will collect these cards at the end of the tours so responses to all questions can be placed on the website.

On our short drive to the plant, we'll give you a brief description of the area and history of the plant. Pike County, where the plant resides, has a population of 25,000. The unemployment rate for Pike County is over 10%, one of the highest rates in the nation. This project is very important for southern Ohio. The closest municipality is the village of Piketon, located approximately 4 miles north of the site with a population of 1800. North of Piketon are the towns of Waverly and

Chillicothe and the state capitol, Columbus, is approximately 75 miles directly north of the plant on U.S. Route 23.

This southern Ohio region is rich in history with the old Ohio and Erie Canal running where U.S. Route 23 now passes through Waverly. The Ohio River town of Portsmouth, located 22 miles south of the plant, for many years served the steel and shoe industries before the closings of their steel mill, coke plant and shoe factories.

The Portsmouth Gaseous Diffusion Plant is the largest employer in Pike County with about 1900 employees. It was built between 1952 and 1956 as the last of three gaseous diffusion plants constructed to enrich uranium in support of the nation's nuclear defense program. The other two facilities were in Oak Ridge, Tennessee and Paducah, Kentucky. During the early years of the plant, highly enriched uranium was produced for use in the nuclear weapons and nuclear submarine programs. The production of highly enriched uranium was suspended in 1991. The plant enriched uranium for use in commercial nuclear power plants until production ceased in May 2001.

Bus will travel down the North Access Road to the Guard Station for entry – Point out X-735 closed Sanitary Landfill on right of bus as enter Guard Station.

1. 340-Acre Site on Northeast Portion of Plantsite – Potential cell location

The field to the left of the bus is commonly referred to as the 340-acre site which has been considered for transfer to the local Community Reuse Organization. It is one of four sites that were also evaluated for a potential on-site disposal cell. Although a decision for an on-site disposal cell has not yet been determined and will require discussions with the public and regulatory agencies, it is DOE's preference in D&D to dispose of equipment, building debris, and remediation waste in an on-site disposal cell. There are conceptual cost estimates for an on-site disposal cell and the estimated size for an on-site cell is a total 120 acres. This information will be placed on the website

2. X-735 Landfill

The X-735 Landfill to the right of the bus is entirely fenced and occupies a total area about 21 acres. This unit was operated as a captive industrial landfill from 1980 until 1988 and accepted non-hazardous, non-radioactive, non-PCB solid waste, fly ash, bottom ash, and asbestos generated at PORTS. The landfill was capped in 1995 in accordance with regulatory requirements. The estimated annual compacted waste volume for the X-735 landfill during operations was 10,000 to 13,000 cubic yards. The northern portion of the landfill was closed as a RCRA Subtitle C unit and the southern portion was closed as a RCRA Subtitle D unit. Surveillance and maintenance of this landfill is part of the current remediation contract that will be in the D&D contract work.

Bus continues to travel down North Access Road to the Perimeter Road. Bus stops at stop sign before turning left onto Perimeter Road.

The plant's Perimeter Road encircles the facility and is about seven miles in length. The DOE Reservation is almost 3800 acres of which 1200 acres are inside the Perimeter Road.

Bus will travel down the Perimeter Road toward the Main Drive Gate – point out Water Treatment Plant on left and X-533 Switchyard on right, which they will see closer once the bus travels into the plant site.

3. **X-533 Switchyard on right**

The X-533 Switchyard located on the right side of the bus is one of two major switchyards on plant site and is a part of the initial phase of the D&D project.

When this plant was in full operations, it used as much electrical power as a major city the size of Cleveland every day – approximately 2000 megawatts.

4. **X-611 Water Treatment Plant on left**

The Water Treatment Plant on the hill to the left of the bus has provided the plant with potable water, fire control water and makeup water for the recirculating cooling water system. Water is transported to the Water Treatment Plant via pipelines from well fields located along the Scioto River, which is about two miles west of the plant. The facility was constructed in 1954 with the exception of the X-611D building that was constructed in 1979. When the plant was fully operational, about 48 million liters of groundwater were treated each day at the facility, about 11.7 million liters were used as sanitary water and 36.3 million liters were used as cooling water daily.

This facility is currently leased and operating and is not part of the initial phase of the D&D project.

5. **X-633 Cooling Towers on right**

To the right of the bus are the X-633 Cooling Towers which consist of a recirculating cooling water pump house and four cooling towers. These cooling towers removed heat collected in the recirculating cooling water system from the X-333 Process Building through evaporative cooling.

6. **Uranium Management Center to right**

The large tan building to the right of the bus is the Uranium Management Center, a DOE-managed building used to provide interim storage of surplus low-enriched, normal and depleted uranium material consolidated at Portsmouth from Fernald, Hanford and several universities from across the country.

Approximately 4,500 metric tons of uranium material is in designated storage locations within and outside this building. The Department at this time is considering the uranium material for potential reuse, sale or disposition. The Surveillance and Maintenance of the facility and any remaining material are currently scheduled for the initial phase of the D&D project.

7. **Converter Shell Removal Project to right**

Also seen on the right side of the bus is an ongoing DOE project to dispose of 438 old process equipment converter shells that have been stored outside for 30 years.

Bus will turn right off Perimeter Road down the ramp to the main entrance of the administrative area of the gaseous diffusion plant – entering through the Main Drive Gate. The Security Officer accompanying the bus will identify to the Protective Force that he has been with the bus continuously so the bus does not have to be searched at this entry point and will continue through the portal.

8. **X-100 Administrative Building to left of bus**

On the left side of the bus is the X-100 Administration Building which was built in 1954 as a temporary facility. It has been and continues to be used for administrative and related functions. The leased, two-story facility has a central core area with four wings extending from the core. A basement is located under the core section of the building. A classified storage vault is in the center of the building and plant records are located in this facility. This facility is not a part of the initial phase of the D&D project. However, it is within the overall D&D scope.

9. **X-750 Mobile Equipment Maintenance Shop on right of bus**

The X-750 Mobile Equipment Maintenance Shop Garage and storage building to the right of the bus were constructed in 1953 and are currently leased and have not yet been turned over to DOE. They are not part of the initial phase of the D&D project; however, these facilities are within the overall D&D scope. The facility has been used as the main onsite fuel storage and refueling station for plant vehicles in the past and now for the current lessee's vehicles.

On the left is the X-102 (cafeteria) and the X-710 (laboratory)

Bus will travel straight down 10th Street to stop sign at Pike Avenue. Bus will turn left onto Pike Avenue, driving by X-326 Process Building on right, the X-760 Chemical Treatment Facility, X-770 building site, and X-600 Steam Plant on left.

10. **X-326 Process Building**

The X-326 Process Building is on the right of the bus. Please note that the exterior paneling on this building, as well as the other process buildings, is composed of transite (asbestos) material.

The X-326 Process Building is 2230 feet long, 552 feet wide and 62 feet high. Its two floors have a combined floor space of approximately 58 acres. The equipment is on two floors, with the diffusion equipment on the cell floor above and the electrical switchgear and control instrumentation located on the first floor, which is the opposite of how the equipment was placed in the K-25 facility in Oak Ridge.

The X-326 Process Building is the building where the highly enriched uranium was produced on-site, the high-end of the enrichment process. At one time, this plant could produce enriched uranium greater than 95% assay. The X-326 Building has the smallest size equipment due to the criticality concerns. There are a total of 720 stages of X-27-size equipment and 1620 stages of X-25-size equipment.

The process buildings, switchyards and cooling towers are all "Deferred Units". You will hear the term deferred units used several times today. This term refers to the 41units that have been deferred by the Ohio EPA under the Consent Decree for final investigation and potential remediation of the soils and groundwater beneath them until the plant went into D&D. This deferral was agreed upon since the units were still in operation during the initial environmental investigations and remediation at that time might have impacted operations or resulted in recontamination of the area due to ongoing operations.

The X-326 Building has not yet been returned to DOE and is not included in the initial phase of the D&D Project. However, it is within the overall D&D scope. The X-326 Building is a deferred unit under the Consent Decree.

Bus will turn right off Pike Avenue onto 5th Street and continue to stop sign at 5th Street and Scioto Avenue. Bus will then turn right onto Scioto Avenue, heading north along west side of X-326 Building.

To the left of the bus, you will note some of the ongoing construction for the centrifuge facilities that are seen in the distance. You can see the two large centrifuge process buildings to the left and to their right is the 5-story recycle and assembly maintenance building for the centrifuge program. The fence on the left side of the bus is a divider: the facilities to the left of the fence are a part of the centrifuge program and are not in the D&D project. The facilities to the right of the fence are in the gaseous diffusion plant and are a part of the overall D&D project. The centrifuge technology has features that require a Q clearance, and the GDP technology has features that require an L clearance.

Bus drives north on Scioto Avenue all the way to end, driving by the UDS plant, X-740 plume area and X-530 Switchyard on left side of the bus. On

right of bus will be the X-326 and X-330 Process Buildings. The Bus will turn right onto 20th Street at the X-630 Cooling Towers.

11. X-330 Process Building to right of bus

The currently leased X-330 Process Building is approximately 2176 feet long, 640-feet wide and 66 feet high. It houses X-29 and X-31 size equipment and the Tails Withdrawal Facility. These process buildings are currently being deactivated to prepare for D&D, removing lube oils and pyranol transformer oils from the equipment. A dry pipe fire suppression system installation is underway.

All Greater-than-Safe-Mass uranium deposits were removed from the process buildings in 2007. This building is not included in the initial phase of the D&D Project. However, it is within the overall D&D scope.

Large round pipe to the right is a steam pipe.

12. X-740 Phytoremediation and Groundwater plume area is located on left

The small grove of trees to the left side of the bus is part of the X-740 phytoremediation project and the X-740 groundwater plume area.

13. X-530 Switchyard on left side of bus

The X-530 Switchyard and associated buildings are located in the northwest portion of the plant site. The switchyard receives power from the Ohio Valley Electric Corporation's system at 345kV, nominal, and delivered power at 13.8kV to the switch houses for distribution to both the X-330 and X-326 Process Buildings and area auxiliaries.

The X-530 Switchyard is not currently scheduled for the initial phase of the D&D project. However, it is within the overall D&D scope. The X-530 Switchyard is a deferred unit under the Consent Decree.

14. X-745 C&E DUF6 Storage Yards on left side of bus

DOE is responsible for about 21,000 cylinders of depleted uranium hexafluoride (DUF6), currently stored in three storage yards. You can see the X-745C cylinder storage yard to the left and the X-745E cylinder yard is located behind the cooling towers directly ahead and to your left. The third cylinder storage yard, for storage of depleted uranium cylinders shipped to Portsmouth from Oak Ridge, is located to the outside of the Perimeter Road in the northwestern portion of the plant site. These 14-ton cylinders and the DUF6 cylinder yards are not a part of the initial phase of the D&D project. These cylinders will be converted to a more stable form through the new DUF6 Conversion Plant being built by Uranium Disposition Services.

15. X-630 Cooling Tower Complex

The X-630 Cooling Towers complex on the left consist of the X-630-1 Recirculating Cooling Water Pump House, the X-630-2A and X-630-2B Cooling Towers and the X-630-3 Acid Handling Station. The RCW Pump House is about 10,200 square feet and constructed of reinforced concrete. The cooling towers contain 10 cell structures; each cell has a venturi that measures 22 feet in diameter and is constructed primarily of wood, concrete, and transite. The Acid Handling Station has two 10,000-gallon tanks, one 600-gallon tank and three 500-gallon portable aboveground storage tanks. Chromium-based rust inhibitors were used in the cooling water piping for a number of years at the plant.

This cooling tower complex is being returned to DOE and is part of the initial phase of the D&D project. The X-630 Cooling Tower complex is a deferred unit under the Consent Decree. Once the structures are removed, the soils and groundwater will need to be investigated and remediated, if necessary, in accordance with the Consent Decree.

Bus turns right onto 20th Street and travels east, turning into driveway at Door 9 of the X-333 Process Building.

16. X-344 Building Complex – Tc-99 Removal Project on left of bus

The X-344 Building Complex to your left is where the lessee is currently performing a project for the Department of Energy to remove technetium contamination from UF6 feed material to make this uranium usable by the nuclear industry. The UF6 is heated in an autoclave (like a large pressure cooker) and traps are used to remove the Tc-99. This project is approximately 87% complete and is expected to be completed by the end of 2008. Clean UF6 material is being sold by DOE and the funds are used to pay for this project.

The X-344A UF6 Sampling Facility was built in 1958, is a steel framed building with 40,000 sq ft on the ground floor, 18,700 sq ft on the second floor and 4,300 sq ft in the basement.

The facility is currently leased and is not a part of the initial phase of the D&D project. However, it is within the overall D&D scope.

17. X-342A Feed Vaporization and X-342B Fluorine Storage Buildings

The X-342A Feed Vaporization and Fluorine Generation Facility is located adjacent to the X-344A Sampling Facility. This facility encompasses 13,800 sq ft and has a steel frame with exterior transite siding set on a concrete slab.

The facility was built in 1954 and used to feed, vaporize and sample UF6. The facility is currently leased and is not a part of the initial phase of the D&D project; however, it is within the overall D&D scope. These are deferred units under the Consent Decree.

18. X-333 Process Building (to right of bus)

The X-333 Process Building is coming up on your right. The X-333 building is about 1456 feet long, 970 feet wide and 82 feet high. The two floors have a combined floor space of approximately 65 acres. The X-333 is the first of the three gaseous diffusion process buildings where the gaseous diffusion operations began. It houses the largest pieces of equipment, which required the most electrical power consumption. The maintenance of the PCB collection and containment troughing system in these process buildings and the cleanup and disposal of PCB spills and leaks are ongoing DOE legacy waste activities. The lessee has been deactivating equipment, removing lube oils and pyranol transformer oils as part of the Cold Shutdown activities, as well as installing a dry pipe fire suppression system.

The building is a little more than 1/4 mile long. There are 640 stages in this building and a total of 4,020 stages in all three process buildings. Each cell in the building consists of three major components: a motor, compressor and converter. The other two process buildings have a similar concept but with much smaller equipment. The X-330 Building has 1100 stages and the X-326 Building has over 2,000 stages. We will stop here and take you into the X-333 Process Building to see a demonstration cell and a building guide will explain how the gaseous diffusion process worked.

This process building is being returned to DOE and is part of the initial phase of the D&D project. *Removal of the equipment in the building will require an L-Clearance due to classification issues: internal components of some of the gaseous diffusion equipment are still classified.* The X-333 Building is a deferred unit under the Consent Decree. Once the building is removed, the soils and groundwater will need to be investigated and remediated, if necessary, in accordance with the Consent Decree.

Bus will stop at Door 9 on the north side of the X-333 Process Building. All tour attendees will disembark bus after being divided into Group 1 and Group 2. Group 1 (first half of bus) will go to the Demonstration Cell. Group 2 (back half of bus) will go to the Auxiliary Control Room (ACR); then Groups will switch. This portion of tour will take about 45 minutes.

Introduction: Cid Voth, U.S. Department of Energy's Portsmouth Paducah Project office

Inside X-333 Uranium Enrichment Process Building

This script is written as an introduction to the X-333 building. Please write all questions you may have for submittal so that we may post the answers on the website.

Description: X-333 is one of the three Category 2 Nuclear facility process buildings scheduled within the D&D project. The characteristics of this facility are typical of all the process buildings.

- All the process buildings are of the same typical construction.
- X-333 building is a two story steel frame building constructed in 1955.
- The building consists of 66 acres of floor space, over 1450 feet long, 970 feet wide, and 82 feet high.
- It has transite (asbestos) siding, cement floors and columns, a flat composite built up tar/gravel –coated roof, block interior locker and control rooms on the first floor, and typical transite, asbestos and block process cell enclosures on the second floor.
- The “operating” floor of the building containing the power, utility and control equipment is the first floor of the building.
- The cell floor, which holds the uranium enrichment equipment in 10 units and 80 cells, is on the second floor of the building.
- Most of the main utilities; original electrical from the X-533 switchyard, fire water, potable water, sewer, etc. comes from underground up into the building from the utilities tunnels across the road.
- Electrical from the X-530 switchyard (was recently changed from X-533 switchyard), Re-circulating water and steam enter the building from above ground as well as the process tie lines between the buildings.
- There are rail spurs on both the east and west sides of the building in the “track alleys”.
- Many services; dry air, nitrogen, etc. are distributed from inside the building or from outside tanks in the “track alleys” and along the buildings.

Step Inside

- You are looking at one corridor and about 50 feet each way as we walk the ~900 feet. X-333 has ~15 times the equipment layout that you will see on this tour, one of three such buildings on site.

- The building has to be presently heated electrically with portable heaters since the processing has been shut down that provided the vast majority of the buildings heat.

- The fire system protection has recently been converted in X-333 and X-330 to a dry pipe system to minimize the need for heating a large part of the building.

- There is an extensive shutdown HVAC system with 100 supply fans and various exhaust fans along the edge and roof of the building for heat dissipation during operations.

- The duct work contains PCB impregnated gaskets, which was soaked with oil during the enrichment process.

- Lubricating oils have misted into the HVAC duct work of the building and has transferred PCBs from the impregnated HVAC duct gaskets.

- Consequently, a maze of PVC piping has been installed to collect the PCBs in drain manifolds that are dripping from the HVAC gasket, thus minimizing the leaks to the building floors.

- The building contains over 150,000 gallons of PCB transfer oil present in over 150 transformers and more than 6000 static condensers.

- Uranium enrichment required extensive electrical equipment to support the pressures and temperatures necessary for processing.

- The concrete floors do, however, have PCB and Chromium contamination due to PCB leaks from transformers and HVAC duct gaskets along with chromium contaminant from the raw cooling water.

- X-333 has large quantities of fluorescent light tubes containing mercury and PCB from the lighting ballasts.

- Mercury is also present in the HVAC control switches as well as other pneumatic controls.

- For auxiliary power systems and controls, X-333 also contains a large quantity of lead acid batteries to be removed and processed.

- The second floor and about 30% of the first floor is Contamination Control Zones.

- The first floor also contains copious quantities of material, waste, and property for eventual disposition.

- Other items within the facility include asbestos insulation, compressed gas cylinders, electric carts, diesel and gasoline powered vehicles. Welding gases, and explosive gases also exist within the building.

- Also, the building houses various chemicals used for facility cleaning and operational support including aluminum oxide, sulfuric acid, nitric acid, oils, paints, adhesives, etc.

Demo Cell

- X-333 was used for the lowest enrichment processing and therefore processed the highest volume of uranium inventory.

- X-333 houses the largest process equipment ("000" converters) and the largest cells in the three process buildings.

- The cell floor is divided into 10 units and 80 cells with 8 stages in each cell. Therefore, there are 640 installed "000" size cell stages. The building also contains some spare equipment.

- Each stage contains a "000" converter, a compressor, a stage R-114 coolant system inside the cell, a chromium based (later changed to phosphate based) corrosion inhibitor RCW condenser system outside the cell, a 3300 or 2850 hp electric motor, a dry air system, and associated equipment and valves. (See Typical Motor) A stage contains over 100,000 pounds of equipment.

- In X-333, over one and a half million pounds of R-114 was used in the cell cooling system, cold recovery system, and air conditioners since it was chemically stable and compatible with UF6.

- All cell and unit bypass housings were heated with steam using asbestos insulated piping.

- 144,000 gallons of process lube oil is also used for cooling in 16 tanks on the first floor.

- Chemicals involved in or produced by the uranium enrichment process include UF6, UF, Fluorine, uranium oxides, chlorine tri-fluoride, various metals, etc.

- Much of the PCB laden Pryanol oil, process lube oil, and R-114 have been removed from process equipment but residual amounts remain.

- (See typical “000” converter, and Contamination Control Zones.)

- In X-333, the cells have been treated to Always Safe Mass.

- In X-333, several pieces of process equipment, including the interior of the converters and compressor seals are still identified as classified.

- In this depiction of the enrichment process, you can see the typical cell with associated equipment and how the stages are looped to maximize the enrichment process.

- Cell enclosures are connected by one or more feed lines to continue the enrichment process.

- These cells are not leak tight but the contamination levels inside the enclosures are orders of magnitude above the remaining cell floor levels.

- Due to recycling uranium through the national enrichment process, small amounts of transuranics and TC-99 are present in various sections of the building.

- There are 11 high bay cranes used to lift the process equipment (e.g,. converters which are the largest weighing 33 ton) the cranes are in place, the Department makes no claims to certification status or operability.

Area Control Room

- This room is one of the original control centers for the enrichment process.

- The control consists of your typical controls laid out much like a nuclear reactor control room consisting of gauges and alarm systems for monitoring individual cell components.

- The room houses the old indicators of the process controls that are presently non-operational, and thus covered over.

- Most of the control systems are pneumatically or hydraulically operated consisting of an extensive network of copper piping.

- It also monitors the operational building systems including the Criticality Accident Alarm System (CAAS), buffering systems, and other building functions.

- The area control room is of a 1950's vintage and therefore contains such hazards as lead, mercury, asbestos (tile, pipe insulation, etc.), and other compounds (chromium, other metals).

- The area control room also houses the locker room and break room for the area. Since X-333, and this area, has been converted to a dry pipe fire suppression system, the water lines for this area have been insulated and modified.

Other Systems

- Other auxiliary systems within the building include gas transfer systems for plant air, dry air, surge control, product withdrawal, etc.; freezer/sublimer systems; and cell treatment gas transfers.

Attendees exit X-333 Building to re-board bus. Bus backs out of driveway at Door 9, turns east onto 20th Street and left onto Green, driving around the X-533A Switchyard (located across from the X-333 Process Building). Guide will point out X-343 Feed Facility and the X-633 Cooling Towers on right before the bus drives around switchyard.

19. X-343 Feed Facility – right of bus

Just east of the X-333 Building and seen to the right of the bus, as we prepare to drive around the X-533A switchyard, is the X-343 Feed Vaporization Sampling Facility. The facility is used for feed sampling and contains seven autoclaves for vaporization of UF6. The feed cylinders would be brought into this facility, placed in autoclaves and heated to a gaseous phase to pipe into the process buildings as part of the gaseous diffusion process. This facility was constructed in 1981. The steel-framed building is 18,500 sq ft.

This building is currently leased and is not a part of the initial phase of the D&D project. However, it is within the overall D&D scope.

20. X-633 Cooling Tower Complex – right side of bus

To the right of the bus are the X-633 Cooling Towers which consist of a recirculating cooling water pump house and four cooling towers. These cooling towers removed heat collected in the recirculating cooling water system from the X-333 Process Building through evaporative cooling. These cooling towers are being turned over to DOE and will be a part of the initial phase of the D&D project. They are also deferred units under the Consent Decree. Once the structures are removed, the soils and groundwater will need to be investigated and remediated, if necessary, in accordance with the Consent Decree.

It's important to note that site-wide investigation studies were conducted in the 1990s. The existing characterization data from those early studies is available in the DOE's Environmental Information Center, which is located on the second floor of the Endeavor Center where the tour started today.

21. X-533A Switchyard (left side of bus)

Again, the X-533A Switchyard located to the left side of the bus is one of two major switchyards on plant site and is a part of the initial phase of the D&D project. This switchyard received power from the Ohio Valley Electric Corporation system at 345kV, nominal, and delivered power at 13.8kV nominal to the switch houses for distribution to the X-333 Process Building and area auxiliaries. A project is currently underway to de-energize and transfer the power from this switchyard to the X-530 Switchyard, the switchyard we saw earlier on the west side of the X-330 Process Building. This switchyard is a deferred unit under the Consent Decree. Once the structures are removed, the soils and groundwater will need to be investigated and remediated, if necessary, in accordance with the Consent Decree.

Note that this area is also one of the four proposed sites for an on-site disposal cell.

Bus heads back west on 20th Street to stop sign. Point out X-334 Building on right of bus.

22. X-334 Transformer Storage and Cleaning Building

The small X-334 Transformer Storage and Cleaning Building to the right of the bus houses a transformer storage and cleaning area that has been in place since 1985. The building houses storage tanks containing PCB-mixed oils and a diked cleaning facility. Operations included repair of equipment from the X-530A and X-533A Switchyards. The building is of steel construction covering about 2,500 square feet. This building is currently scheduled for the Initial phase of the D&D project.

On the left is an X-333 withdrawal alley.

Bus turns left onto Pike Avenue and left onto 18Th Street, driving between the X-333 and X-330 Process Buildings. As bus turns onto 18th Street, the X-345 building is on the right side of the bus.

The square tie- lines transport the process gas to the X-330 process building.

The LAW (Low Assay Withdrawal) station is to the left.

23. X-345 Special Nuclear Material Storage Building

The X-345 Special Nuclear Material Storage Building is on your right. This building was previously used to store highly enriched uranium, or HEU, at the site. Remnants of the razor wire, motion detectors and cameras that were protective measures for this building are still visible. HEU material is no longer being produced or stored on-site. The X-345 building is a single story, reinforced concrete structure built in 1980. Total floor area is 35,260 sq ft. This structure is not currently scheduled under the Initial phase of the D&D project; however, it is within the overall D&D scope.

24. X-627 Groundwater Treatment Facility on right of bus

The blue-sided building to your right just past the X-345 is the X-627 groundwater treatment facility, built in 2004. This DOE-managed building under the current remediation contractor treats groundwater collected from sumps in the basements of the adjacent X-705 Decontamination Building and X-700 Cleaning Facility. Continued surveillance and maintenance of this facility is currently scheduled for the initial phase of the D&D project.

We currently are crossing the area of the seven-unit groundwater plume that is contaminated primarily with TCE, which was an industrial solvent formerly used at the plant. The seven-unit plume includes areas beneath the X-705 Decontamination Building, the X-700 Cleaning Facility and the northeastern portion of the X-720 Maintenance Building. The seven-unit plume is a deferred unit under the Consent Decree.

Bus travels east on 18th Street to Jackson Avenue. Point out X-705 and X-700 Buildings to right of bus.

25. X-705 Decontamination and Recovery Facility and X-700 Chemical Cleaning/Converter and Weld Shop and Radiation Calibration Lab

As we head east, the two large buildings to the right are currently leased and are not part of the Initial phase of the D&D project; however, they are within the overall D&D scope. The X-705 Decontamination Building is the first building we are approaching, followed by the X-700 Cleaning Facility.

The X-705 Decontamination and Recovery Facility was built in 1955 with about 100,000 sq ft of floor space. The facility has steel support columns, a concrete slab, walls of concrete and transite and a metal deck roof supported by steel trusses. The facility has had five general uses: process equipment disassembly and decontamination; small parts cleaning and decontamination; uranium recovery; routine chemical analyses; and laundry of company clothing worn by plant personnel.

Two vapor degreasers in the X-700 Building, using heated TCE for many years until the late 1980s, resulted in contamination of the groundwater, identified as the 7-Unit Groundwater Plume. Waste waters from the X-700 Cleaning Facility

were sent to the X-701B Holding Pond area, which resulted in the high TCE-concentration groundwater plume in that area. The X-700 Cleaning Facility is a 128,800 sq ft building, built in 1955 and was used for equipment maintenance support for non-radioactive or low-level radioactively contaminated equipment from the diffusion cascade. The process lines running from the X-700 facility to the X-701B area are deferred units, as are the soils at each of these two buildings.

A radioactive waste incinerator previously was located between the two buildings and was removed by DOE in 1996. The soils in the immediate vicinity of the incinerator site are also a deferred unit under the Consent Decree.

26. X-701B Holding Pond Groundwater Treatment and X-623 Groundwater Treatment Facility (DOE)

DOE's remediation contractor is currently performing a project using an oxidant injection treatment for remediating the X-701B Holding Pond area, located ahead of the bus and to the left. The project is being completed in phases and will include capping of the area after oxidant treatment is finished. The X-701B groundwater plume contains the highest concentrations of TCE contamination on-site. A Groundwater Treatment Facility is located to the right of the X-701B Holding Pond area and is one of four treatment facilities currently operated to treat contaminated groundwater on-site. This facility treats groundwater from the western portion of the X-701B Holding Pond area. A Dense Non-Aqueous Phase Liquids (DNAPL) separator was installed at the facility to remove DNAPLs. The treatment facility treats about 284,000 gallons of groundwater per month. A second treatment facility is located to the east, across the Perimeter Road, to treat the eastern most portion of this groundwater plume and prevent migration of the plume into Little Beaver Creek. Continued surveillance and maintenance of this remediation site is currently scheduled for the initial phase of the D&D project.

27. X-744G Uranium Management Center (DOE)

The large tan building on the left is a DOE-managed building used to provide interim storage for surplus low-enriched, natural and depleted uranium material from Fernald, Hanford, and several universities from across the country.

Bus turns right onto Jackson Avenue, driving by the X-744J, H, L Warehouses and the X-720 Maintenance Building

29. X-744J, H and L Warehouses

A number of warehouses are located on plant site. The warehouses to the left of the bus were built in the early 1950s, are currently leased and have not yet been returned to DOE. They are not part of the initial phase of the D&D project; however, they are within the overall D&D scope.

To the right of the bus, just east of the X-700 Cleaning Facility, is a grassy area where the former X-701A Lime House and X-701C Neutralization Pit once stood; both were removed by DOE in 2001. Groundwater monitoring of this area continues under the current remediation contract.

30. X-105 Electronic Maintenance Building

The site of the former X-105 Electronic Maintenance Building is to the left of the bus. This was one of 14 inactive facilities recently demolished by the current remediation contractor. The facility was removed just below grade and any utilities or conduit beneath the facility was left in place. A photograph is posted at the site to show the building prior to demolition.

31. X-720 Maintenance and Stores Building (USEC Leased)

Continuing south on Jackson Avenue, we are passing by the 312,000 sq ft X-720 Maintenance and Stores Building, with dual occupancy by both the lessee and DOE contractor personnel. This building was used in the past for various maintenance shop activities, storage of parts, and testing and inspection of process and auxiliary equipment. It was the main maintenance facility with machinery work on-site. The building is not included in the initial phase of the of the D&D project; however, it is within the overall D&D scope.

The bus will turn right on 12th Street; Guide will point out facilities to left of bus, the X-741 Oil Drum Storage Building and X-746 Former Receiving Warehouse.

32. X-741 Oil Drum Storage Building to left and X-746 Former Receiving Warehouse on left

To the left of the bus is the X-741 Oil Drum Storage Building and just beyond it is the X-746 Former Receiving Warehouse. The Oil Drum Storage Building is leased and has not yet been returned to DOE. It is not currently scheduled for the initial phase of the D&D project; however, it is within the overall D&D scope. The X-746 Receiving Warehouse has been included in the current remediation contractor's scope for demolition later this year.

Note that this area is also one of the four proposed sites for an on-site disposal cell.

Bus turns south (left) onto Mahoning Avenue all the way to 6th Street.

33. X-103 Auxiliary Office Building to right of bus and X-750 Garage to left of bus

To the right of the bus is the X-103 Auxiliary Office Building, a 10,000 sq ft one-story, steel framed facility built in 1954. It is currently leased and has not been returned to DOE. It is not currently scheduled for the initial phase of the D&D project; however, it is within the overall D&D scope.

The X-750 Mobile Equipment Maintenance Shop Garage is on the left of the bus. It was the main onsite fuel storage and refueling station for site vehicles since it was constructed in 1953. The garage is a leased facility and serves the lessee's vehicles. It has not yet been returned to DOE and is not currently scheduled for the initial phase of the D&D project; however, it is within the overall D&D scope.

34. X-300 Plant Control Facility

The dome-shaped X-300 Plant Control Facility of reinforced concrete is located to the right of the bus. This is the hub of the gaseous diffusion plant, which houses the Plant Shift Superintendent's Office. This is the first area of response for any incidents at the plant. This 16,000 sq ft facility has operated non-stop, 24 hours a day, since the plant was built in the early 1950s. Control and instrumentation tunnels extend from the basement to each of the process buildings.

The building is leased and is not included in the initial phase of the D&D project. However, it is within the overall D&D scope.

35. X-102 Cafeteria, X-100 Administration Building and X-101 Health Services Building

To the left of the bus is the X-102 Cafeteria, a single story, wood-framed facility with cement asbestos shingles covering the exterior walls. The cafeteria was built in 1954 and continues to operate today. To the rear of the cafeteria is the two-story X-100 Administration Building, which was built as a "temporary" facility in the early 1950s. To the right of the cafeteria is the X-101 plant medical facility with a doctor on staff. The lessee workforce uses this medical facility; however, the DOE contractor staff does not – based on current arrangements, they are sent to off-site medical facilities. All three of these facilities are similar to the early 1950s Army barrack-type structures. They are still leased and are not part of the initial phase of the D&D project. However, they are within the overall D&D scope.

36. X-710 Technical Services Building to right of bus

The X-710 Technical Services Building is to the right of the bus. This facility is leased. It is the main facility for laboratory testing and R&D for the plant. The X-710 operations have included material sampling and testing, chemical analyses and laboratory services. This building has not been returned to DOE and is not part of the Initial phase of the D&D project. However, it is within the overall D&D scope.

37. X-770 Mechanical Test Building Site – recently demolished – on right

The X-770 Mechanical Test Building site is located to the right of the bus. The building was demolished by the current remediation contractor in early 2007. The building was approximately 23,000 sq. ft. and was built in 1954 as a test loop facility to test gaseous diffusion equipment prior to being installed into the

process buildings. The remediation contractor will be removing the slab this year and evaluating the soils for any potential remediation.

Bus turns right onto Sixth Street, driving between the X-600 Steam Plant on left of bus and the X-770 Building Site on right.
This area is the 5-Unit Groundwater Plume Area, which is controlled by a series of extraction wells pumping the groundwater to the X-622 Groundwater Treatment Facility. Continued surveillance and maintenance of this unit is currently scheduled for the initial phase of the D&D project.

38. X-749A Classified Landfill

The X-749A closed, classified landfill is shown as the mound to the left of the bus. This is a solid waste landfill that was capped in 1994 in accordance with regulatory requirements. Classified materials, such as computer tapes and documents, are disposed in the six-acre landfill. Groundwater in the area around the landfill continues to be monitored under the current remediation contract and requires ongoing reporting to the state of Ohio. Continued surveillance and maintenance of this unit is currently scheduled for the initial phase of the D&D project.

39. X-600 Steam Plant

The X-600 Steam Plant is a leased facility. It provides steam heat for the buildings in the gaseous diffusion plant area and to heat the autoclaves. The coal-fired steam plant is 19,506 sq ft and is constructed on a concrete slab with concrete walls on the ground floor and transite siding on a steel frame for the operating floor and upper floor. It operates 24 hours a day. The steam plant is not part of the initial phase of the D&D project; however, it is within the overall D&D scope. The Steam Plant and adjoining Coal Pile Yard and Coal Pile Runoff Treatment Facility are deferred units under the Consent Decree.

Bus turns right again (traveling north) onto Pike Street.

Bus passengers on the right side of the bus will be able to view the X-770 photograph posted at the building site, showing what the building looked like before demolition.

40. X-760 Chemical Engineering Building

The X-760 Chemical Engineering Facility, built in 1954, is about 8,047 sq ft and is constructed on a concrete slab with a masonry exterior. The original purpose of the facility was to conduct pilot and bench scale studies. The facility was used to conduct studies of methods to recover uranium from solutions, to study UF6 releases in an environmental chamber, to treat PCBs with sodium, and to conduct a wide variety of mechanical as well as chemical experiments.
This facility is currently scheduled for the initial phase of the D&D Project.

Bus will continue traveling north on Pike Street to 16th Street, turning right onto 16th Street at the Fire Water Tower.

Again, to orient you to the site map, we are passing the X-326 Process Building on the left where the highly enriched uranium was produced, and the X-330 Process Building is the next building further down on the left side of the bus.

41. Fire Water Tower on Right

The fire water tower to the right provides fire water for the building sprinkler systems. It is leased and has not yet been turned over to DOE. The tower is not currently scheduled under the initial phase of the D&D Project; however, it is within the overall D&D scope.

Bus turns right onto 16th Street, traveling by the X-345 Special Nuclear Material Storage Building, the X-705 Decontamination Building and X-700 Cleaning Facility all on the left side of the bus, with the north side of the X-720 Maintenance and Stores Building located on the right side of the bus.

Guide will point out the large "000" converters sitting in the parking lot to the rear of the X-705 Decontamination Building on the left side of the bus. Also, the majority of scrap materials seen surrounding these facilities are leased personalty. It's uncertain at this point when this material will be returned to DOE and become a part of the overall D&D project for final disposition.

To the left are X-345, X-705, X-700; on the right is the X-720 building.

The bus will turn right again onto Jackson Avenue, right onto 12th Street, left onto Mahoning Avenue (repeating the previous route) and left again on 10th Street to exit the plant's Property Protection Area through the Main Drive Gate.

42. X-104 Guard Headquarters (on left of bus exiting the GDP at Main Drive Gate)

The X-104 Guard Headquarters located on the left side of the bus just before the Main Drive Gate was built in 1954. It is a 10,600 sq ft concrete block structure used as headquarters for the Protective Force at the plant. Just north of the X-104 is the X-104A Indoor Firing Range, built in the 1980s as a shooting practice range for the guard force. These facilities are leased and are not currently scheduled under the initial phase of the D&D Project; however, they are within the overall D&D scope.

Bus will leave the GDP area via Main Drive Gate. Badges and TLDs will be collected at the Main Drive Gate. The bus will travel south on the Perimeter Road.

Guide will point out the potential on-site disposal cell location in the field to the right of bus as it travels down the Perimeter Road prior to turning right onto Hewes Street.

44. X-230K South Holding Pond (right of bus)

The X-230K South Holding Pond, to the right of the bus, is a leased facility and includes an NPDES permitted outfall. The pond collects surface waters and drainage from the southern portion of the plant site. This pond is a deferred unit under the Consent Decree with the state of Ohio.

43. Peter Kiewit Landfill (left of bus)

The X-749B Landfill, also called the Peter Kiewit Landfill named for the original construction contractor at the plant, is located to the left of the bus. This 11.2 acre landfill was used from 1953 until 1968 as a salvage yard, burn pit, construction waste disposal area and later as a sanitary landfill. No records exist to characterize the disposed materials. About 1000 feet of Big Run Creek was relocated in 1994 to prevent seeps from entering the creek. A collection system was also installed in 1994 to collect the seeps for treatment at the X-622 groundwater treatment facility. A multi-layered clay cap was completed in 1998 in accordance with the regulatory requirements. Continued surveillance and maintenance of this unit is currently scheduled for the initial phase of the D&D project.

45. X-751 Mobile Equipment Garage (orange building to right of bus)

The X-751 Mobile Equipment Garage, located to the right of the bus, was built in 1979 as part of the original DOE centrifuge plant built at Portsmouth in the late 1970s and early 1980s. It was designed to maintain vehicles and mobile equipment for the GCEP construction. DOE has leased this facility to the Ohio Army National Guard since 1988. It is not currently scheduled for the initial phase of the D&D project; however, it is within the overall D&D scope.

Bus will turn into the X-2207A Parking Lot (outside the B-Pedestrian Portal) and will stop on the northwest end of the Parking Lot behind the X-1020 Emergency Operations Center. Passengers will get off the bus to stretch and the Guide will discuss the Gas Centrifuge Enrichment Plant (GCEP) facilities in view. 'Portapots' available at stop.

It's important for you to know where the emergency response facilities are located at the site. We have stopped here to point out these facilities as well as other centrifuge buildings on the southwest end of the plant site.

46. X-1007 Fire Department, X-1020 Emergency Operations Center & X-1000 Administration Building

The newer, brick buildings to the left of the bus were built as part of the Gas Centrifuge Enrichment Plant in the early 1980s. The first building is the plant's Fire Department and to the right of the Fire Department is the X-1020 Emergency Operations Center. These are leased facilities. DOE and the site contractors staff an EOC cadre and participate in routine emergency drills and exercises. To the far left is the two-story brick X-1000 Administration Building which houses DOE and contractor staffs working on the Environmental Management Program. The centrifuge Process Buildings and centrifuge Feed and Withdrawal Building can be seen in the background.

Participants re-board bus. Bus exits parking lot, driving east on Hewes Street back to Perimeter Road. The bus will turn left onto Perimeter Road and travel north around the plant site to the western portion of the federal reservation. Traveling around the Perimeter Road, the guide will point out the 2 potential on-site disposal cell locations inside the security area (from overlooking the X-744G Uranium Management Center). As the bus travels around the east side of the plant, the guide will also point out the X-701B Interceptor Trench area, X-230-J7 Holding Pond and the X-624 Groundwater Treatment Facility.

47. <u>The Converter Shell Removal Project to the left.</u>

On the left side of the bus is an ongoing DOE project to dispose of 438 old process equipment converter shells that have been stored outside for approximately 30 years.The equipment was removed from the process buildings as part of a major equipment upgrade project in the 1970s.The converter shells are being sheared and containerized by the current remediation contractor for shipment to the Nevada Test Site for disposal.

<u>48. Uranium Management Center to left</u>

The large tan building to the left of the bus is the Uranium Management Center, a DOE-managed building used to provide interim storage of surplus low-enriched, normal and depleted uranium material consolidated at Portsmouth from Fernald, Hanford and several universities from across the country. Approximately 4,500 metric tons of uranium material is in designated storage locations within and outside this building. The Department at this time is considering the uranium material for potential reuse, sale or disposition. The Surveillance and Maintenance of the facility and the remaining material are currently scheduled for the initial phase of the D&D project.

<u>49. X-701B Interceptor Trench/X-624 Groundwater Treatment Facility</u>

Located to the right of the bus, an 1100-ft. trench system, utilizing a french drain groundwater collection system in a "T" shape, was constructed in the fall of 1991 to contain the X-701B groundwater plume and prevent TCE from migrating into

Little Beaver Creek. The X-230-J7 Holding Pond is also seen on the right of the bus. This Holding Pond is a leased facility and is also a deferred unit under the Consent Decree. The X-624 Groundwater Treatment Facility is seen to the east of the Holding Pond. This facility is managed by the current remediation contractor and it treats groundwater from the X-701B interceptor trench at an average of 250,000 gallons per month. Continued surveillance and maintenance of the groundwater treatment facility and remediaton unit are currently scheduled for the initial phase of the D&D project.

There are a total of 19 NPDES-permitted outfalls at the site: 11 outfalls are managed by the lessee and 8 are regulated by the DOE NPDES permit issued to its remediation contractor.

Bus travels around north side of plant. Guide will point out the X-745G Depleted Uranium Cylinder Yard and the X-747H Scrap Yard area.

50. X-745G Depleted Uranium Cylinder Yard (right of bus)

The X-745G Depleted Uranium Cylinder Yard to the right of the bus is half leased to the lessee. The left half of the yard is used by DOE to store depleted uranium cylinders that were shipped to Portsmouth from Oak Ridge, Tennessee. These cylinders will be processed through the new DUF6 conversion plant on-site once it is operational.

51. X-747H Scrap Yard area (right of bus)

Between 2000 and 2005, DOE removed more than 8,400 tons of radioactively contaminated scrap metal that had been stored over 7 acres in the X-747H Scrap Yard to the right of the bus. The infrastructure put in place for that project has remained to be used as a temporary waste staging and transportation area. Rail shipping is available at this location.

A small fenced area at this scrap yard had been leased and is being returned to DOE and is currently scheduled for the initial phase of the D&D Project. The X-747H Scrap Yard is a deferred unit under the Consent Decree.

52. Don Marquis Substation

Power is brought to the plant through the Don Marquis Substation, located on the hill to the right of the bus. The unit is a two-acre, two-tiered structure that houses the transformers, reactors and capacitors. Power comes into the Don Marquis Substation from two off-site generating stations that were initially built to serve the plant: Kyger Creek on the Ohio River in Gallipolis, Ohio and Clifty Creek in Indiana. Since the plant is no longer in production, the Ohio Valley Electric Corporation has placed the excess power on the national grid system. The Don Marquis Substation is owned and operated by the Ohio Valley Electric Corporation and is not part of the GDP D&D project.

Bus turns left at stoplight, onto the Truck Access Road. The Uranium Disposition Services' DUF6 Conversion Plant is to the right of the bus.

53. DUF6 Conversion Plant Site

To the right of the bus is the Uranium Disposition Services DUF6 Conversion Plant. UDS was contracted by DOE to design, construct and operate conversion facilities at both Portsmouth and Paducah, KY. These plants will convert DOE's large inventory of DUF6 to a more stable chemical form, uranium oxide, for reuse or disposal. The two-story tan building is the administration building and the concrete structure is the processing facility. Conversion of all the cylinders at Portsmouth will take about 18 years. Start of operations is now scheduled in 2009. Overall construction is more than 95% complete. Completion of construction is anticipated in mid-July, 2008. The site will then enter a period of testing and operational readiness prior to facility start-up. The conversion plant is expected to employ 160 during full operations.

54. GCEP Facilities

You can see the two large centrifuge process buildings (X-3001 and X-3002) and the 5-story recycle and assembly maintenance building (X-7725) for the centrifuge program. The facilities that are a part of the centrifuge program require a Q-clearance and are not in the D&D project. The facilities in the gaseous diffusion plant, require an L-clearance and are a part of the overall D&D project.

The bus will turn around in the parking lot by the D Vehicle Portal and return to the Truck Access Road, traveling west onto the West Access Road at the stoplight.

55. X-740 Phytoremediation and Groundwater plume area is located on right

The small grove of trees to the right side of the bus is part of the X-740 phytoremediation project and the X-740 groundwater plume area. A total of 765 hybrid poplar trees were planted in 1998-99 over a 2.6-acre area to treat a low-concentration TCE-contaminated groundwater plume. This remedy has not met the remediation goals established by the regulatory agencies so the current remediation contractor is evaluating implementation of a supplemental remedy by oxidant injection at this plume, as discussed with Ohio EPA. Continued surveillance and maintenance of this remediation unit is currently scheduled for the initial phase of the D&D project.

As the bus travels on West Access Road to exit plant site, the guide will point out the Ohio Valley Electric Corporation office building on the right of the bus. The bus will then turn right onto U.S. Route 23 from the West Access Road and return to the Ohio State University Endeavor Center for de-boarding.

We hope this tour has been helpful in providing a broad overview of the Portsmouth site and highlighting those areas that will be included in the initial phase of the D&D project. Remember to turn in any question cards you have when you depart the bus. We want to thank you again for participating. Have a safe trip home.

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